We claim:

1. A transgenic fly whose genome comprises a DNA sequence encoding a polypeptide comprising the Abeta portion of human *APP* wherein said DNA sequence encodes Abeta40 (SEQ ID NO:1) or Abeta42 (SEQ ID NO: 2), fused to a signal sequence, said DNA sequence operably linked to a tissue-specific expression control sequence; and expressing said DNA sequence, wherein expression of said DNA sequence results in said fly displaying an altered phenotype.

2. The transgenic fly of claim 1 wherein said DNA sequence encodes Abeta42, and wherein said tissue specific expression control sequence comprises the eye-specific promoter GMR.

3. The transgenic fly of claim 2 wherein said expression of said DNA sequence results in said fly displaying the "rough eye" phenotype.

4. A transgenic fly whose genome comprises a DNA sequence encoding a polypeptide comprising the wild type C99 portion of human *APP* (SEQ. ID NO:3) or C99 portion of human *APP* with the London Mutation (SEQ ID NO: 4), fused to a signal sequence, said DNA sequence operably linked to a tissue-specific expression control sequence; and expressing said DNA sequence, wherein expression of said DNA sequence results in said fly displaying an altered phenotype.

5. The transgenic fly of claim 4, wherein said DNA sequence encodes wild type C99, and wherein said tissue-specific expression control sequence comprises the UAS control element activated by Gal4 protein produced in the brain by the 7B-Gal4 transgene.

6. The transgenic fly of claim 5 wherein said expression of said DNA sequence results in said fly displaying a phenotype characterized as a locomotory defect.

7. The transgenic fly of claim 4, wherein said DNA sequence encodes either wild type C99 or C99 portion of human *APP* with the London Mutation, and wherein said tissue-specific expression control sequence is the UAS control element activated by Gal4 protein produced by the *apterous*-Gal4 transgene.

8. The transgenic fly of claim 7 wherein said expression of said DNA sequence results in said fly displaying the "concave wing" phenotype.

9. A method to identify genetic modifiers of the APP pathway, said method comprising:

(a) providing a transgenic fly whose genome comprises a DNA sequence encoding a polypeptide comprising the Abeta portion of human *APP* wherein said DNA sequence encodes Abeta40 (SEQ. ID NO:1) or Abeta42 (SEQ ID NO: 2), fused to a signal sequence, said DNA sequence operably linked to a tissue-specific expression control sequence; and expressing said DNA sequence, wherein expression of said DNA sequence results in said fly displaying an altered phenotype;

(b) crossing said transgenic fly with a fly containing a mutation in a known or predicted gene; and

(c) screening progeny of said crosses for flies that carry said DNA sequence and said mutation and display modified expression of the transgenic phenotype as compared to controls.

10. The method of claim 9 wherein said genetic modifier and/or its human homolog is a gene that affects the course of Alzheimer's Disease.

11. The method of claim 9 wherein said DNA sequence encodes Abeta42, and wherein said tissue specific expression control sequence comprises the eye-specific promoter GMR.

12. The method of claim 11 wherein said expression of said DNA sequence results in said fly displaying the "rough eye" phenotype.

13. A method to identify genetic modifiers of the APP pathway, said method comprising:

(a) providing a transgenic fly whose genome comprises a DNA sequence encoding a polypeptide comprising the wild type C99 portion of human *APP* (SEQ. ID NO:3) or C99 portion of human *APP* with the London Mutation (SEQ ID NO: 4), fused to a signal sequence, said DNA sequence operably linked to a tissue-specific expression control sequence; and expressing said DNA sequence, wherein expression of said DNA sequence results in said fly displaying an altered phenotype;

(b) crossing said transgenic fly with a fly containing a mutation in a known or predicted gene; and,

(c) screening progeny of said crosses for flies that carry said DNA sequence and said mutation and display modified expression of the transgenic phenotype as compared to controls.

14. The method of claim 13 wherein said genetic modifier and/or its human homolog is a gene that affects the course of Alzheimer's Disease.

15. The method of claim 13, wherein said DNA sequence encodes wild type C99 and wherein said tissue-specific expression control sequence comprises the UAS control element activated by Gal4 protein produced in the brain by the 7B-Gal4 transgene.

16. The method of claim 15 wherein expression of said DNA sequence results in said fly displaying a phenotype characterized by a locomotory defect.

17. The method of claim 13, wherein said DNA sequence encodes either wild type C99 or C99 portion of human *APP* with the London Mutation, and wherein said tissue-specific expression control sequence comprises the UAS control element activated by Gal4 protein produced by the *apterous*-Gal4 transgene.

18. The method of claim 17 wherein said expression of said DNA sequence results in said fly displaying the "concave wing" phenotype.

19. A method to identify targets for the development of therapeutics to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway said method comprising identifying the human homologs of the genetic modifiers identified according to the method of claim 9.

20. The method of claim 19 wherein said condition is Alzheimer's Disease.

21. The method of claim 19 further comprising identifying the human homologs of the genetic modifiers which map to the area on human chromosome 10 shown to have genetic linkage to Alzheimer's Disease.

22. A method to identify targets for the development of therapeutics to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway said method comprising identifying the human homologs of the genetic modifiers identified according to the method of claim 13.

23. The method of claim 22 wherein said condition is Alzheimer's Disease.

24. The method of claim 22 further comprising identifying the human homologs of the genetic modifiers which map to the area on human chromosome 10 shown to have genetic linkage to Alzheimer's Disease.

25. A method to identify targets for the development of therapeutics to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway, said method comprising identifying genes that are involved in the pathways regulated by the transcription factors encoded by the human sequences selected from the group consisting of hCP50765 (SEQ ID NO. 35) and hCP41313 (SEQ ID NO 15, SEQ ID NO17, SEQ ID NO 53).

26. The method of claim 25 wherein said condition is Alzheimer's Disease.

27. A method to identify compounds useful for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising assaying for compounds that can modify the phenotypes induced by expression of Abeta, said method comprising:

(a) providing a transgenic fly whose genome comprises a DNA sequence encoding a polypeptide comprising the Abeta portion of human *APP* wherein said DNA sequence encodes Abeta40 (SEQ. ID NO:1) or Abeta42 (SEQ ID NO: 2), fused to a signal sequence, said DNA sequence operably linked to a tissue-specific expression control sequence; and expressing said DNA sequence, wherein expression of said DNA sequence results in said fly displaying an altered phenotype;

(b) administering to said fly a candidate compound; and,

(c) assaying for changes in the phenotype of said fly of step (a) as compared to the phenotype of a fly of step (a) not administered the candidate compound.

28. The method of claim 27 wherein said condition is Alzheimer's Disease.

29. The method of claim 27 wherein said DNA sequence encodes Abeta42, and wherein said tissue specific expression control sequence is the eye-specific promoter GMR.

30. The method of claim 29 wherein said expression of said DNA sequence results in said fly displaying said altered phenotype referred to as the "rough eye" phenotype.

31. A method to identify compounds useful for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising assaying for compounds that can modify the phenotypes induced by expression of C99, said method comprising:

(a) providing a transgenic fly whose genome comprises a DNA sequence encoding a polypeptide comprising the wild type C99 portion of human *APP* (SEQ. ID NO:3) or C99 portion of human *APP* with the London Mutation (SEQ ID NO: 4), fused to a signal sequence, said DNA sequence operably linked to a tissue-specific expression control sequence; and expressing said DNA sequence, wherein expression of said DNA sequence results in said fly displaying an altered phenotype;

(b) administering to said fly a candidate compound; and,

(c) assaying for changes in the phenotype of said fly of step (a) as compared to the phenotype of a fly of step (a) not administered the candidate compound.

32. The method of claim 31 wherein said condition is Alzheimer's Disease.

33. The method of claim 31, wherein said DNA sequence encodes wild type C99, and wherein said tissue-specific expression control sequence comprises the UAS control element activated by Gal4 protein produced in the brain by the 7B-Gal4 transgene.

34. The method of claim 33 wherein expression of said DNA sequence results in said fly displaying said altered phenotype characterized by a locomotory defect.

35. The method of claim 31, wherein said DNA sequence encodes either wild type C99 or C99 portion of human *APP* with the London Mutation, and wherein said tissue-specific expression control sequence comprises the UAS control element activated by Gal4 protein produced by the *apterous*-Gal4 transgene.

36. The method of claim 35 wherein said expression of said DNA sequence results in said fly displaying said altered phenotype referred to as the "concave wing" phenotype.

37. A method for identifying compounds useful for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising

a) administering candidate compounds to an in vitro or in vivo model of Alzheimer's Disease; and,

b) assaying for changes in expression, protein level or protein activity of a homolog of a genetic modifier identified according to the method of claim 9 wherein altered expression, protein levels or protein activity of any one of said homologs compared to levels in a control to which a candidate compound has not been administered indicates a compound of therapeutic value.

38. A method for identifying compounds useful for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising

a) administering candidate compounds to an in vitro or in vivo model of Alzheimer's Disease; and,

b) assaying for changes in expression, protein level or protein activity of a homolog of a genetic modifier identified according to the method of claim 13 wherein altered expression, protein levels or protein activity of any one of said homologs compared to levels in a control to which a candidate compound has not been administered indicates a compound of therapeutic value.

39. A method for identifying compounds useful for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising

a) administering candidate compounds to an in vitro or in vivo model of Alzheimer's Disease; and,

b) assaying for changes in expression, protein level or protein activity of a homolog of a genetic modifier selected from the group consisting of those disclosed in Table 1 wherein altered expression, protein levels or protein activity of any one of said homologs compared to levels in a control to which a candidate compound has not been administered indicates a compound of therapeutic value.

40. The method of claim 39 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15, SEQ ID NO 17, SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

41. A method for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising administering to a subject in need thereof a therapeutically effective amount of a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier identified according to the method of claim 9.

42. The method of claim 41 wherein said substance is selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

43. The method of claim 41 wherein said substance comprises any one or more antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

44. The method of claim 41 wherein said conditions include Alzheimer's Disease.

45. A method for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising administering to a subject in need thereof a therapeutically effective amount of a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier identified according to the method of claim 13.

46. The method of claim 45 wherein said substance is selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

47. The method of claim 45 wherein said substance comprises any one or more antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

48. The method of claim 45 wherein said conditions include Alzheimer's Disease.

49. A method for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising administering to a subject in need thereof a therapeutically effective amount of a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier wherein said genetic modifiers are selected from the group consisting of those disclosed in Table 1.

50. The method of claim 49 wherein said substance is selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

51. The method of claim 49 wherein said substance comprises any one or more antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

52. The method of claim 49 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15, SEQ ID NO 17 , SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

53. The method of claim 49 wherein said conditions include Alzheimer's Disease.

54. A method for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising administering to a subject in need thereof a pharmaceutical composition comprising a therapeutically effective amount of a substance that inhibits or promotes the expression and/or

function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier identified according to the method of claim 9.

55. The method of claim 54 wherein said pharmaceutical composition comprises a therapeutically effective amount of a substance selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

56. The method of claim 54 wherein said pharmaceutical composition comprises a therapeutically effective amount of an antibody or antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

57. The method of claim 54 wherein said conditions include Alzheimer's Disease.

58. A method for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising administering to a subject in need thereof a pharmaceutical composition comprising a therapeutically effective amount of a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier identified according to the method of claim 13.

59. The method of claim 58 wherein said pharmaceutical composition comprises a therapeutically effective amount of a substance selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

60. The method of claim 58 wherein said pharmaceutical composition comprises a therapeutically effective amount of an antibody or antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

61. The method of claim 58 wherein said conditions include Alzheimer's Disease.

62. A method for the treatment, prevention or amelioration of conditions associated with abnormal regulation of the APP pathway comprising administering to a subject in need thereof a pharmaceutical composition comprising a therapeutically effective amount of a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs selected from the group consisting of those disclosed in Table 1.

63. The method of claim 62 wherein said pharmaceutical composition comprises a therapeutically effective amount of a substance selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

64. The method of claim 62 wherein said pharmaceutical composition comprises a therapeutically effective amount of an antibody or antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

65. The method of claim 62 wherein said conditions include Alzheimer's Disease.

66. The method of claim 62 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15, SEQ ID

NO 17, SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

67. The method of claim 66 wherein said conditions include Alzheimer's Disease.

68. A pharmaceutical composition comprising a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier identified according to the method of claim 9 in an amount effective to prevent, treat or ameliorate a condition associated with abnormal regulation of the APP pathway in a subject in need thereof.

69. The pharmaceutical composition of claim 68 comprising a substance selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

70. The pharmaceutical composition of claim 68 comprising an antibody or antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

71. The pharmaceutical composition of claim 68 wherein said condition is Alzheimer's Disease.

72. A pharmaceutical composition comprising a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier identified according to the method of claim 13 in an amount effective to prevent, treat or ameliorate a condition associated with abnormal regulation of the APP pathway in a subject in need thereof.

73. The pharmaceutical composition of claim 72 comprising a substance selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

74. The pharmaceutical composition of claim 72 comprising an antibody or antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

75. The pharmaceutical composition of claim 72 wherein said condition is Alzheimer's Disease.

76. A pharmaceutical composition comprising a substance that inhibits or promotes the expression and/or function of any one or more of the genes or encoded polypeptides of the human homologs of a genetic modifier selected from the group consisting of those disclosed in Table 1 in an amount effective to prevent, treat or ameliorate a condition associated with abnormal regulation of the APP pathway in a subject in need thereof.

77. The pharmaceutical composition of claim 76 comprising a substance selected from the group consisting of: compounds, triple helix DNA, antisense oligonucleotides, double stranded RNA molecules and ribozymes, and wherein said substances are designed to inhibit expression of any one or more of the human homologs of said genetic modifiers.

78. The pharmaceutical composition of claim 76 comprising an antibody or antibodies and/or fragments thereof directed to the polypeptide encoded by any one or more of the human homologs of said genetic modifiers.

79. The pharmaceutical composition of claim 76 wherein said condition is Alzheimer's Disease.

80. The pharmaceutical composition of claim 76 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15, SEQ ID NO 17, SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

81. The pharmaceutical composition of claim 80 wherein said condition is Alzheimer's Disease.

82. A method to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway comprising:

(a) assaying for mRNA and/or protein levels of a human homolog of a genetic modifier identified according to the method of claim 9 in a subject; and,

(b) administering to a subject with abnormal mRNA and/or protein levels compared to controls a substance in an amount sufficient to treat or ameliorate the pathological effects of said condition.

83. The method of claim 82 wherein said condition is Alzheimer's Disease.

84. A method to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway comprising:

a) assaying for mRNA and/or protein levels of a human homolog of a genetic modifier identified according to the method of claim 13 in a subject; and,

b) administering to a subject with abnormal mRNA and/or protein levels compared to controls a substance in an amount sufficient to treat or

ameliorate the pathological effects of said condition.

85. The method of claim 84 wherein said condition is Alzheimer's Disease.

86. A method to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway comprising:

a) assaying for mRNA and/or protein levels of a human homolog of a genetic modifier selected from the group consisting of those disclosed in Table 1 in a subject; and,

b) administering to a subject with abnormal mRNA and/or protein levels compared to controls a substance in an amount sufficient to treat or ameliorate the pathological effects of said condition.

87. The method of claim 86 wherein said condition is Alzheimer's Disease.

88. The method of claim 86 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15, SEQ ID NO , SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

89. The method of claim 88 wherein said condition is Alzheimer's Disease.

90. A diagnostic kit for detecting mRNA levels and/or protein levels of a human homolog of a genetic modifier identified according to the method of claim 9 in a biological sample, said kit comprising:

(a) a polynucleotide of a human homolog of a genetic modifier or a fragment thereof;

(b) a nucleotide sequence complementary to that of (a);

(c) a polypeptide of a human homolog of a genetic modifier, or a fragment thereof; or

(d) an antibody to said polypeptide

wherein components (a), (b), (c) or (d) may comprise a substantial component.

91. A diagnostic kit for detecting mRNA levels and/or protein levels of a human homolog of a genetic modifier identified according to the method of claim 13 in a biological sample, said kit comprising:

(a) a polynucleotide of a human homolog of a genetic modifier or a fragment thereof;

(b) a nucleotide sequence complementary to that of (a);

(c) a polypeptide of a human homolog of a genetic modifier, or a fragment thereof; or

(d) an antibody to said polypeptide

wherein components (a), (b), (c) or (d) may comprise a substantial component.

92. A diagnostic kit for detecting mRNA levels and/or protein levels of a human homolog of a genetic modifier selected from the group consisting of those disclosed in Table 1 in a biological sample, said kit comprising:

(a) a polynucleotide of a human homolog of a genetic modifier or a fragment thereof;

(b) a nucleotide sequence complementary to that of (a);

(c) a polypeptide of a human homolog of a genetic modifier, or a fragment thereof; or

(d) an antibody to said polypeptide

wherein components (a), (b), (c) or (d) may comprise a substantial component.

93. The diagnostic kit of claim 92 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15,

SEQ ID NO 17, SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

94. A method to diagnose subjects suffering from conditions associated with abnormal regulation of the APP pathway comprising measuring the mRNA level and/or the level or activity of polypeptides encoded by any one or more of the human homologs of a genetic modifier identified according to the method of claim 9, in a biological sample from a subject, wherein an abnormal level relative to the level thereof in a control subject is diagnostic of said condition.

95. The method of claim 94 wherein said conditions include Alzheimer's Disease.

96. A method to diagnose subjects suffering from conditions associated with abnormal regulation of the APP pathway comprising measuring the mRNA level and/or the level or activity of polypeptides encoded by any one or more of the human homologs of a genetic modifier identified according to the method of claim 13, in a biological sample from a subject, wherein an abnormal level relative to the level thereof in a control subject is diagnostic of said condition.

97. The method of claim 96 wherein said conditions include Alzheimer's Disease.

98. A method to diagnose subjects suffering from conditions associated with abnormal regulation of the APP pathway comprising measuring the mRNA level and/or the level or activity of polypeptides encoded by any one or more of the human homologs of a genetic modifier selected from the group consisting of those disclosed in Table 1, in a biological sample from a subject, wherein an abnormal level relative to the level thereof in a control subject is diagnostic of said condition.

99. The method of claim 98 wherein said conditions include Alzheimer's Disease.

100. The method of claim 98 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15, SEQ ID NO 17, SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

101. The method of claim 100 wherein said conditions include Alzheimer's Disease.

102. A method to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway comprising introducing nucleic acids encoding any one or more of the human homologs of a genetic modifier identified according to the method of claim 9 into one or more tissues of a subject in need thereof resulting in expression and/or secretion by cells within the subject of one or more proteins encoded by the nucleic acids.

103. The method of claim 102 wherein said conditions include Alzheimer's Disease.

104. A method to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway comprising introducing nucleic acids encoding any one or more of the human homologs of a genetic modifier identified according to the method of claim 13 into one or more tissues of a subject in need thereof resulting in expression and/or secretion by cells within the subject of one or more proteins encoded by the nucleic acids.

105. The method of claim 104 wherein said conditions include Alzheimer's Disease.

106. A method to treat, prevent or ameliorate conditions associated with abnormal regulation of the APP pathway comprising introducing nucleic acids encoding any one or more of the human homologs of a genetic modifier selected from the group consisting of those disclosed in Table 1 into one or more tissues of a subject in need thereof resulting in expression and/or secretion by cells within the subject of one or more proteins encoded by the nucleic acids.

107. The method of claim 106 wherein said conditions include Alzheimer's Disease.

108. The method of claim 106 wherein said human homolog is selected from the group consisting of hCP50765, (SEQ ID NO. 35), hCP41313 (SEQ ID NO 15, SEQ ID NO 17, SEQ ID NO 53), hCP33787 (SEQ ID NO 41) and hCP51594 (SEQ ID NO 43).

109. The method of claim 108 wherein said conditions include Alzheimer's Disease.